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Subject: Ultra-rapid clocks
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Dear Colleagues,

This is to inform you that GFZ is now including clock values in their IGS Ultra-rapid submissions. Estimated satellite clocks are available for both the 1st 24-hr observed period of the sp3 files and predicted satellite clocks are generated for the 2nd 24-hr prediction period. GFZ began submitting their satellite clocks in their sp3 files for 17 January 2001 12hr (1097-3_12). Thanks to Robert Weber, the GFZ clocks began to be used in the IGU clock combination starting on 29 January 2001 12hr (1099-1_12). For the present, USNO provides the only other Ultra-rapid clock submissions. Experience thus far indicates that both ACs perform similarly most of the time. However, the addition of GFZ should greatly improve the overall reliability. (At USNO we have recently had a lot of problems with resets in the chosen reference clock, which prevents usable clock predictions from being produced.)

It remains to assess the usability of the Ultra-rapid clock predictions. Under favorable circumstances, they appear to be good to about 5 ns RMS over the relevant 12-hr prediction interval. However, day-to-day frequency instabilities in GPS time (which is used to align all the clocks on the observed day) can sometimes be a major error source. Closer study is needed to determine whether a better time scale alignment can be achieved.

I would like to congratulate and thank Gerd Gendt and his GFZ colleagues on this development.

--Jim